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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/693,663	10/20/2000	Andrew Hilliard Arrowood	5577-214	8210

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EXAMINER
JACOBS, LASHONDA T

ART UNIT	PAPER NUMBER
2157	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 August 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/23/04 and 9/15/0</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Response to Amendment

This Office Action is in response to Applicants' Request for Reconsideration filed on August 3,

2004. Claims 1-40 are presented for further examination.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims **1-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Aman et al

(hereinafter, "Aman", U.S. Pat. No. 5,603,029) in view of Aukia et al (hereinafter, "Aukia", U.S.

Pat. No. 6,594,268).

As per claims **1, 21** and **31**, Aman discloses a method of distributing workload between data

processing systems executing an application which communicates over a network, the method

comprising:

*   receiving a request for a connection to the application over the network (abstract, col.

    10, lines 54-59 and col. 12, lines 25-31);

*   obtaining workload information for the data processing systems (col. 13, lines 34-49);

- generating workload metrics associated with respective ones of the data processing

  systems utilizing the workload information (col. 13, lines 34-49, col. 14, lines 42-61,

  col. 16, lines 22-35 and lines 42-55); and

- distributing the requested connection to instances of the application executing on the

  data processing systems based on the generated workload metrics (col. 16, lines 22-35

  lines 42-55 and col. 17, lines 32-36).

However, Aman does not explicitly disclose:

- obtaining network quality of service information associated with communications over

  the network for respective ones of the data processing systems; and

- generating workload metrics associated with respective ones of the data processing

  systems utilizing network quality of service information for the data processing systems.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- obtaining network quality of service information associated with communications over

  the network for respective ones of the data processing systems (col. 6, lines 59-66 and

  col. 10, lines 53-52); and

- generating workload metrics associated with respective ones of the data processing

  systems utilizing network quality of service information for the data processing systems

  (col. 6, lines 59-66 and col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims **2, 22** and **32**, Aman discloses the invention substantially as claims discussed

above.

However, Aman does not explicitly disclose:

- wherein the network quality of service information comprises at least one of network

   packet loss information, network timeout information, and number of connections

   information.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- wherein the network quality of service information comprises at least one of network

   packet loss information, network timeout information, and number of connections

   information (col. 6, lines 59-66 and col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims **3, 23** and **33**, Aman discloses:

- wherein the workload information comprises a weight value (W) corresponding to a

   data processing systems processing capacity (col. 13, lines 34-49, col. 14, lines 42-61,

   col. 16, lines 22-35 and lines 42-55).

As per claims **4, 17, 24** and **34**, Aman discloses the invention substantially as claims discussed above.

However, Aman does not explicitly disclose:

- wherein the network quality of service information comprises a loss weight (F-loss) based on packet loss ratio, a network timeout weight (F-timeout=) based on a network timeout ratio and a connection weight (F-con) based on a number of active connections.

Aukia discloses a method for determining network routing based on quality of server (QoS) provisioning parameters and network topology information including:

- wherein the network quality of service information comprises a loss weight (F-loss) based on packet loss ratio, a network timeout weight (F-timeout=) based on a network timeout ratio and a connection weight (F-con) based on a number of active connections (col. 6, lines 59-66, col. 10, lines 53-52, col. 16, lines 62-67, col. 17, lines 1-10 and col. 24, lines 24-40).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Aman by including QoS provisioning parameters that specifies certain minimum allowed characteristics of a transmission capacity of the network in order send/route requests to servers in a timely and efficient manner.

As per claims **5, 25** and **35**, Aman discloses the invention substantially as claims discussed above.

However, Aman does not explicitly disclose:

- wherein F-loss is a ratio of retransmitted packets to total transmitted packets, wherein

    F-timeout is a ratio of number of timeouts to number of transmitted segments, and

    wherein F-con is a ratio of current connections to total allowed connections.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- wherein F-loss is a ratio of retransmitted packets to total transmitted packets, wherein

    F-timeout is a ratio of number of timeouts to number of transmitted segments, and

    wherein F-con is a ratio of current connections to total allowed connections (col. 6, lines

    59-66, col. 10, lines 53-52, col. 16, lines 62-67, col. 17, lines 1-10 and col. 24, lines 24-

    40).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims **6, 19, 26** and **36**, Aman discloses the invention substantially as claims

discussed above.

However, Aman does not explicitly disclose:

- determining a value for F-loss by mapping a TCP loss ratio to the value for F-loss;

    determining a value for F-timeout by mapping a timeout loss ratio to the value for

    F-timeout; and determining a value for F-con by determining if a number of current

    connections exceed a predefined percentage of a total number of allowed connections

    and setting F-con to 1 if the total number of connections exceeds the predefined

percentage of the total number of allowed connections and to 0 if the total number of

connections does not exceed the predefined percentage of the total number of allowed

connections.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- determining a value for F-loss by mapping a TCP loss ratio to the value for F-loss;

  determining a value for F-timeout by mapping a timeout loss ratio to the value for

  F-timeout; and determining a value for F-con by determining if a number of current

  connections exceed a predefined percentage of a total number of allowed connections

  and setting F-con to 1 if the total number of connections exceeds the predefined

  percentage of the total number of allowed connections and to 0 if the total number of

  connections does not exceed the predefined percentage of the total number of allowed

  connections (col. 6, lines 59-66, col. 10, lines 53-52, col. 16, lines 62-67, col. 17, lines

  1-10 and col. 24, lines 24-40).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims 7, 18, 20, 27 and 37, Aman discloses the invention substantially as claims

discussed above.

However, Aman does not explicitly disclose wherein the step of generating workload

metrics comprises the step of evaluating the equation:

- $Aw = (1 - MIN(1, F\text{-}loss + F\text{-}timeout + F\text{-}con)) * W$ where Aw is the workload metric

  (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- $Aw = (1 - MIN(1, F\text{-}loss + F\text{-}timeout + F\text{-}con)) * W$ where Aw is the workload metric

  (col. 16, lines 62-67, col. 17, lines 1-10 and col. 24, lines 24-40).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order to determine the workload or capacity of network in a timely and efficient manner

As per claims **8, 28** and **38**, Aman discloses the invention substantially as claims discussed

above.

However, Aman does not explicitly disclose:

- wherein the quality of service information comprises quality of service information for

  an instance of the application executing on one of the data processing systems.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- wherein the quality of service information comprises quality of service information for

  an instance of the application executing on one of the data processing systems (col. 6,

  lines 59-66 and col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims **9**, **29** and **39**, Aman discloses the invention substantially as claims discussed

above.

However, Aman does not explicitly disclose:

- determining a class of quality of service information associated with the connection

  request and

- wherein the step of obtaining network quality of service information associated with

  communications over the network for the data processing systems comprises obtaining

  network quality of service information for the class of quality of service information

  associated with the connection request.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- determining a class of quality of service information associated with the connection

  request (col. 6, lines 59-66 and col. 10, lines 53-52); and

- wherein the step of obtaining network quality of service information associated with

  communications over the network for the data processing systems comprises obtaining

  network quality of service information for the class of quality of service information

  associated with the connection request (col. 6, lines 59-66, col. 10, lines 53-52 and col.

  21, lines 9-22).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claims **10, 30** and **40**, Aman discloses the invention substantially as claims discussed

above.

However, Aman does not explicitly disclose:

- wherein the step of generating workload metrics comprises the step of combining the

    workload information and the corresponding network quality of service information for

    the data processing systems based on the class of quality of service information

    associated with the request so as to provide workload metrics based on the workload

    information, the quality of service information and the class of quality of service

    information associated with the request.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- wherein the step of generating workload metrics comprises the step of combining the

    workload information and the corresponding network quality of service information for

    the data processing systems based on the class of quality of service information

    associated with the request so as to provide workload metrics based on the workload

    information, the quality of service information and the class of quality of service

    information associated with the request (col. 6, lines 59-66 and col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

and workload information to determine a minimum allowed characteristics of a transmission

capacity of the network in order send/route requests to servers in a timely and efficient manner.

As per claim **11**, Aman discloses:

- wherein the data processing systems comprise data processing systems in a Sysplex,

  wherein the steps of receiving a request for a connection to the application over the

  network, obtaining workload information for the data processing systems, , generating

  workload metrics and distributing the requested connection to application instances on

  the data processing systems based on the workload metric are carried out by a routing

  communication protocol stack in the Sysplex (abstract, col. 11, lines19-24, col. 13,

  lines 34-49, col. 14, lines 42-61, col. 16, lines 22-35 and lines 42-55).

However, Aman does not explicitly disclose:

- obtaining network quality of service information associated with communications over

  the network for the data processing systems.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- obtaining network quality of service information associated with communications over

  the network for respective ones of the data processing systems (col. 6, lines 59-66 and

  col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claim **12**, Aman discloses:

- wherein the routing communication protocol stack obtaining information from policy

  agents executing on the data processing systems in the Sysplex (abstract, col. 11,

  lines19-24, col. 13, lines 34-49, col. 14, lines 42-61, col. 16, lines 22-35 and lines 42-

  55).

However, Aman does not explicitly disclose:

- obtaining quality of service information.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- obtaining network quality of service information (col. 6, lines 59-66 and col. 10, lines

  53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

As per claim **13**, Aman discloses a system for workload distribution, comprising:

- a workload distributor which selects data processing systems in a cluster of data

  processing systems for distribution of connections, based on information associated

  with the data processing systems and workload information associated with the data

  processing systems (col. 13, lines 34-49, col. 14, lines 42-61, col. 16, lines 22-35 and

  lines 42-55); and

- a router (Sysplex router) operably associated with the workload distributor which receives requests for connection to an application executing on ones of the data processing systems and distributes the connections to data processing systems in the cluster of data processing systems selected by the workload distributor (col. 13, lines 34-59, col. 14, lines 42-61, col. 16, lines 22-35 and lines 42-55).

However, Aman does not explicitly disclose:

- obtaining quality of service information.

Aukia discloses a method for determining network routing based on quality of server (QoS) provisioning parameters and network topology information including:

- obtaining network quality of service information (col. 6, lines 59-66 and col. 10, lines 53-52).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Aman by including QoS provisioning parameters that specifies certain minimum allowed characteristics of a transmission capacity of the network in order send/route requests to servers in a timely and efficient manner.

As per claim **14**, Aman discloses:

- wherein the router (Sysplex router) comprises a routing communication protocol stack (col. 13, lines 34-59, col. 14, lines 42-61, col. 16, lines 22-35 and lines 42-55).

As per claim **15**, Aman discloses:

- wherein the requests for connections to the application comprise requests for connections to a dynamically routable virtual Internet Protocol address (col. 13, lines 34-5 and col. 14, lines 42-61).

As per claim **16**, Aman discloses:

- policy agents associated with data processing systems which provide information to the

    workload distributor (col. 10, lines 34-67, col. 11, lines 1-12 and col. 13, lines 40-57).

However, Aman does not explicitly disclose:

- obtaining quality of service information.

Aukia discloses a method for determining network routing based on quality of server (QoS)

provisioning parameters and network topology information including:

- obtaining network quality of service information (col. 13, lines 34-59, col. 14, lines 42-

    61, col. 16, lines 22-35 and lines 42-55).

Given the teaching of Aukia, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify Aman by including QoS provisioning parameters

that specifies certain minimum allowed characteristics of a transmission capacity of the network

in order send/route requests to servers in a timely and efficient manner.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-40 have been considered but are moot in

view of the new ground(s) of rejection.

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

U.S. Pat. No. 5,537,542 to Eilert et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaShonda T. Jacobs whose telephone number is 703-305-7494. The examiner can normally be reached on 8:30 AM - 5:00 PM.
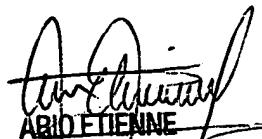
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 703-308-7562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LaShonda T. Jacobs
Examiner
Art Unit 2157

ltj
January 12, 2005

ARIO ETIENNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100